EFFECT OF RESISTANCE TRAINING AND PLYOMETRIC TRAINING IN SERIES AND PARALLEL ON FLEXIBULITY AND STRENGTH AMONG WOMEN STUDENTS

PHYSICAL EDUCATION

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ABSTRACT

Aim of the Study find out the assess Effect of Resistance training and Polymeric training in series and parallel on Flexibility and Strength among women students. The study was formulated as a true random group design, consisting of a pre test and post test. The subjects (n=45) were randomly assigned to three equal groups of fifteen The selected subjects were divided into three equal groups and each group consisted of fifteen subjects. Group I underwent series training of resistance and plyometric training [resistance training for first six weeks and plyometric training for remaining six weeks], Group II underwent parallel training of resistance and plyometric training [resistance and plyometric training s in alternate days and alternate weeks]. Group III acted as control who did not participate in any special training apart from their regular physical education programme in the curriculum. experimental period and after the experimental period of twelve weeks to determine the training effects. The subjects were re-tested after three weeks of cessation of training to found the detraining effects. To identify the significant difference among the groups due to training and detraining mean gain method was followed.

I. INTRODUCTION

Fitness is the state which characterizes the degree to which the person is able to function. Fitness is an individual matter. It implies the ability of each person to live most efficiently with his potentiality. Ability to function depends upon physical, mental, emotional and social components of fitness, all of which are related to each other and mutually interdependent.

The beliefs and experience of physical education today rest on the history of this field of Endeavour. It is the source of physical education's identity. Many of today's activities have their fore-runners in history. Many more facts that will help the physical educators to understand the present and better can be achieved by studying the past.

Statement of the problem

The present investigation is intended Effect of Resistance Training and PlyometricTraining in series and parallel on Flexibility and Strength among women Students

Delimitations

[1] The present study was delimited to forty five women students studying bachelor's degree during the academic year 2014-17

[2] The age of the subjects was 17 to 23 years.

[3] The variables tested were agility and Speed.

Limitations

The study was limited in the following factors.

[1] Heredity, day to day activities, rest period, food habits, life style and family factors could not be controlled.

[2] The general mood of the subjects while have affected the performance and was recognized as a limitation.

[3] All efforts made by the research scholar to motivate the students to put up their optimal performances in various test items. But there were no objective measures available to make sure that each performed their optimum.

Methodology

In this chapter, the procedure and methods applied in the selection of subjects, selection of variable, selection of tests, instruments reliability, reliability of the data, competency of the tester, estimating 1 RM, pilot study, training programmers, orientation to the subjects collection of the data, tests administration, experimental design and statistical procedures has been explained.

II. SELECTION OF SUBJECTS

The purpose fo the study was to find out the effect of resistance training and plyometric training in series and paralle. On selected Flexibility and strength. To achieve this purpose, forty five women students studying bachelor's degree during the academic year 2014-17in Yogivemana University Affiliated Colleges. As per the records, their age ranged from 17 to 23 years. The selected subjects were divided into three equal groups and each group consisted of fifteen subjects. Group I underwent series training of resistance and plyometric training [resistance training for first six weeks and plyometric training for remaining six weeks], Group II underwent parallel training of resistance and plyometric training [resistance and plyometric training s in alternate days and alternate weeks]. Group III acted as control who did not participate in any special training apart from their regular physical education programme in the curriculum. Group I and Group II underwent their respective training programme for four days per week for twelve weeks. The subjects were free to withdraw their consent in case of felling of any discomfort

during the period of their participation, but there were no drop outs in this study.

Selection of Tests

The present study was undertaken to assess the effects of resistance training and plyometric training in series and parallel on selected motor fitness components such as flexibility, strength, . The investigator analysed various literatures and also condulted with physical education professionals touse most suitable tests to ensure the purpose of the study and represented in table -I

Table –I: The Selected Criterion variables and their Standardized Tests

Sl No.	Variables	Tests
1	Flexibility	Sit and Reach
2	Strength	Push –ups

Reliability of the Data

The reliability of the data was established by test -restest method. Ten subject were randomly selected and they were tested twice on selected criterion variables under similar conditions by the same testers. The collected data were analysed by sung intra class correlation to find out the reliability of the data separately for each criterion variable and are presented in tableII.

Table-II: Intra Class Co-Efficient Of Correlation Values on Selected Criterion Variables

S.No.	Variable	"R" Value
1	Flexibility	0.85
2	Strength	0.52

*Significant at .01 level of confidence.
(The table value required for significant at .01 level of confidence is 0.767)

Administrations of Tests

Sit and Reach Test

Purpose : to assess trunk flexibility

Equipments : Yardstick and measuring tape.

Procedure

Line up the 15 inch mark of the yardstick with a line on the floor and tape the ends of the stick to the floor so that the flexomeasure case [window side] is face down. Sit down and line up your heels with the near edge of the 15 inch mark and slide your seat back beyond the zero end of the yardstick. Have a partner stand and brace his or her toes against your heels. Also, have an assistant on each side to hold your knees in a locked position as you prepare to stretch. With heels not more than 5 inches apart, slowly stretch forward, while pushing the flexomeasure case as for down the stick as possible with the finger tips of both hands. Take your reading at the near edge of the flex measure case.

Scoring

Three trails were given and the best of the three trials was recorded as the individual's score.

Push – ups
Purpose

To measure the strength of the arms and the shoulder girdle.

Equipments

A mat on the floor.

Procedure

From a straight arm front leaning rest position, the performer lowers the body until the chest touches the mat and then pushes – upward to the straight arm support. The exercise is continued for as many repetitions as possible with out rest. The body must not sag or pike upward but maintain a straight line throughout the exercise.

Scoring

The score is the number of corret push –ups executed within 30 seconds.

Table-IV: Analysis of Covariance for the Pre and Post Tests Data on Flexibility of Control, Series Training and Parallel Training Groups

Test	Control Group	Series Training Group	Parallel Training Group	Source of Variance	Sum of Squares	DF	Mean Squares	'F' Ratio
Pre Test								
Mean	22.27	23.80	21.47	Between	42.17	2	21.09	0.71
S.D	1.67	1.48	1.54	Within	1245.07	42	29.64	
Post Test								
Mean	22.47	31.90	33.41	Between	933.91	2	466.96	20.39
S.D	1.64	1.49	1.42	Within	962.00	42	22.90	
Adjusted Post Test				Between	961.31	2	480.66	
Mean	22.42	30.72	33.21	Within	3933.86	41	95.95	5.01*

* significant at .05 level of confidence.

[The table alues required for significance at .05 level of confidence for 2 and 42 and 2 and 41 are 3.22 and 3.23 respectively].

The table-IVshows that the pre test mean values of control, series training and parallel training groups on flexibility are 22.27, 23.80 and 21.47 respectively. The obtained "F" ratio of 0.71 for pre test scores is less than the required table value of 3.22 for significance with df 2 and 42 at /05 level of confidence. The post test mean values of control, series training and parallel training groups on flexibility are 22.47, 31.90 and 33.41 respectively. The obtained "F" ratio of 20.39 for post test scores is greater than the required table value of 3.22 for significance with df 2 and 42 at .05 level of confidence. The adjusted post test mean values of control, series training and parallel training groups on flexibility are 22.42, 30.72 and 33.21 respectively. The obtained "f" ratio of 5.01 for adjusted post test scores is greater than the required table value of 3.23 for significance with df 2 and 41 at .05 level of confidence. The results of the study indicates that there is a sifnificant difference, among control, series training and parallel training groups on flexibility. To determine which of the three paired means had significant difference, the scheffe's test was applied as post hoc test and the results are presented in Table -V

Table –V: The Scheeff's test for Differences Between the Adjusted post test Paired Means on Flexibility

Adjusted post Test Means			Mean difference	Confidence interval
Control group	Series Training group	Parallel training group		
22.42	30.72	--	8.30*	2.41
22.42	--	33.21	10.79*	2.41
--	30.72	33.21	2.49*	2.41

* significant at .05 level of confidence

Table-V shows that the man difference values on flexibility between control group and series training group, control group and parallel training group and series training group and parallel training group are 8.30, 10.79 and 2.49 respectively which are greater than the confidence interval value of 2.41. the results of the study shows that significant difference exist between control group and series training group, control group and parallel training group however, the improvement of flexibility was significantly higher for the parallel training group than the series training group. It may be concluded that parallel training is better than the series training in improving the flexibility.

Strength

The analysis of covariance for the pre and post tests data on strength of control group, series training grup and parallel training grou were analysed were analysed and are presented in Table -VI

Table -VI: Analysis of Covariance for the Pre and Post Tests Data on Strength of Control, Series Training and Parallel Training Groups

Test	Control Group	Series Training Group	Parallel Training Group	Source of Variance	Sum of Squares	DF	Mean Squares	'F' Ratio
Pre Test								
Mean	17.31	18.12	19.46	Between	36.58	2	18.29	2.16
S.D	1.92	1.89	1.76	Within	354.33	42	8.44	
Post Test								
Mean	17.92	23.49	26.17	Between	134.18	2	67.09	9.01*
S.D	1.91	1.74	1.66	Within	312.8	42	7.45	
Adjusted Post Test				Between	130.82	2	65.41	56.39*
Mean	17.94	23.62	26.09	Within	47.68	41	1.16	

* significant at .05 level of confidence.
[The table values required for significance at 0.5 level confidence for 2 and 42 and 2 and 41 are 3.22 and 3.23 respectively].

The table VI shows that the pre test mean values of control series training and parallel training groups on strength are 17.31, 18.12 and 19.46 respectively. The obtained "F" ratio of 2.16 for pre test scores is less than the reuired table value of 3.22 for significance with df 2 and 42 at .05 level of confidence. The post test mean values of control, series training and parallel training groups on strength are 17.92, 23,49 and 26.17 respectively. The obtained "F" ratio of 9.01 for post test scores is greater than the required table value of 3.22 for significance with df 2 and 42 at .03 level of confidence. The adjusted post test mean values of control, series training and parallel training groups on strength are 17.94, 23.62 and 26.09 respectively. The obtained "F" ratio of

56.39 for adjusted post tests scores is greater than the required table value of 3.23 for significance with df 2 and 41 at .05 level of confidence. The results of the study indicates that there is a significant difference, among control, series training and parallel training groups on strength. To determine which of the three paired means had a significant difference, the scheffe's test was applied as post hoc test and the results are presented in table -VII

Table –VII: The Scheeff's test for Differences Between the Adjusted post test Paired Means on Strength

Adjusted post Test Means			Mean difference	Confidence interval
Control group	Series Training group	Parallel training group		
17.94	23.62	--	5.68*	2.39
17.94	--	26.09	8.15*	2.39
--	23.62	26.09	2.47*	2.39

* significant at .05 level of confidence

Table-VII A shows that the mean difference values on strength between control group and series training group, control group and parallel training group and series training group and parallel training group are 5.68, 8.15 and 2.47 respectively which are greater than the confidence interval value of 2.9. the the results of the study shows that significance difference exist between control group and series training group and parallel training group on strength. However, the improvement of strength was significantly higher for the parallel training group than the series training group. It may be concluded that parallel training is better than the series training group. It may be concluded that parallel training is better than the series raining in improving the strength.

CONCLUSIONS

From the analysis of the data, the following conclusions were drawn. There was a significant difference among control group, series training group and parallel training group on selected criterion variables namely flexibility, strength, of parallel training group. The series training and parallel training groups significantly improved flexibility, strength, when compared with control group. Both parallel training and series training improved flexibility, strength, better than the series training.
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